Chapter V
A Framework for Distance Education Effectiveness:
An Illustration Using a Business Statistics Course

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ABSTRACT

Distance education is now an integral part of offering courses in many institutions. With increasing access to the Internet, the importance of distance education will only grow. But, to date, the specific benefits that distance education brings to student learning objectives remain unclear. We first propose a framework that links student performance and satisfaction to the learning environment and course delivery. Next, we empirically evaluate our framework using data from a Business Statistics course that we offer in the traditional classroom setting and as a distance-education course. Our results show that a well-designed distance education course can lead to a high level of student satisfaction, but classroom-based students can achieve even higher satisfaction, if they also are given access to learning material on the Internet. This indicates that material for an effective distance-education course also can be used to supplement in-class teaching in order to increase satisfaction with student learning objectives.

INTRODUCTION

Distance education has created a substantial impact on students, faculty, and institutions. Distance education classes now are routinely available to many students. In a survey conducted by the National Center for Education Statistics, the percentage of two- and four-year degree-granting institutions offering distance education classes increased by 11% from 1995 to 1997. The number of courses being offered nearly doubled in the same time period (Sikora & Carrol, 2002). The effect of distance education also has been significant for faculty. In a study conducted by Lewis et al. (1999), nearly 6% of all faculty members in Title IV degree-granting institutions was involved in distance education classes, and about 9% offered courses using non-face-to-face mediums (Lewis et al., 1999). Studies also indicate that distance education faculty members bear a higher burden

of teaching. Bradburn and Zimbler (2002) found that, on average, faculty members teaching distance education classes had more sections and more course preparations than faculty members who only taught face-to-face.

Institutions are also at a crossroads. While the trend to offer more distance education classes is clear, with increasing competition for limited resources, many institutions face questions concerning lack of fit with mission, program development costs, and technological infrastructure, among others (Bradburn & Zimbler, 2002). These questions need to be answered if distance education is to fulfill its potential.

Cost aside, it is clear that students, faculty, and institutions benefit from distance education. But, currently, the benefits of distance education are neither clearly defined nor can they be easily measured. A brief tally from 1992 to 2002 indicates that there were 22 papers finding significant positive effects and 26 not finding significant benefits in using distance education (Russel, 2003a, 2003b). While these studies varied in subject and in the choice of performance metrics, it is still too early to conclude what specific benefits students and institutions can reap from distance education. Importantly, the role distance that education plays in the overall attainment of student learning objectives remains unanswered.

Research efforts continuously have been extended to explain the effectiveness of distance education, and typically, these comparisons are made with traditional classroom education. But in order to clearly evaluate the effects of distance education, factors like student learning styles, delivery of content, course characteristics, and technology also need to be considered. Then, with increasing research, a clearer picture will emerge on factors that lead to a successful implementation of distance education. This study hopes to add to this body of research. We first propose a framework that links student performance and satisfaction with the learning environment and course delivery. Then, we empirically examine our framework and provide more evidence to the growing body of research on distance-education effectiveness. As part of our empirical data, we also show how a Business Statistics course can be offered over the Web.

The ubiquity of the Internet certainly has been a key factor in the rise of distance education. Web-based classes especially occupy a special niche, as their growth has been a result of this spread of the Internet. In this article, we review cases of instruction for two groups of students, those enrolled in a Web-based class vs. those receiving traditional classroom instructions. We propose a framework for studying distance education. We argue that the education environment, whether it is Web-based or classroom-based, will govern how a course is to be designed, and that course design is a critical factor in the overall determinant of student satisfaction level. The primary intent in proposing such a framework is to force us to have a deeper thinking about the overall problem setting. That is, we need to first identify the key structural components leading to satisfaction and how those components are interconnected. Then, after empirical findings are gathered from students, we can be in a better position to pinpoint the potential factors of student satisfaction.

The rest of the article is organized as follows. The next section discusses our framework, linking the learning environment and course design to student satisfaction. This is followed by a description and design of the undergraduate course that we use to study and illustrate our findings. The undergraduate course, Business Statistics, displays many characteristics in order to be successfully administered as a Web class. In addition to discussing course structure in this section, we also present the tools and techniques specifically developed for the Web-based class. Then, we present our results, followed by the Conclusion section.